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Application Number	09/724,784		
	Filing Date	11/28/2000	
	First Named Inventor	Marc A. Unger	
	Group Art Unit	1772	
	Examiner Name	Unassigned	
Total Number of Pages in This Submission	1	Attorney Docket Number	20174003000

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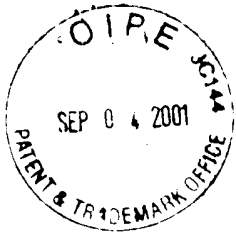
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Marc Unger et al.

Application No.: 09/724,784

Filed: November 28, 2000

For: MICROFABRICATED
ELASTOMERIC VALVE AND PUMP
SYSTEMS

Examiner: Unassigned

Art Unit: 1772

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §1.97 and §1.98

Assistant Commissioner for Patents
Washington, D.C. 20231

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The references cited on attached form PTO/SB/08A/08B are being called to the attention of the Examiner. In accordance with CFR §1.98(d), copies of the references can be found in Application No. 09/605,520, filed June 27, 2000 (Attorney docket No. 20174-000230US), with the exception of reference numbers 1, 24, 28, 52, 59, 63, 67 and 75, copies of which are enclosed herewith. It is respectfully requested that the cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

As provided for by 37 CFR 1.97(g) and (h), no representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information, and no inference should be made that the information and references cited are, or are considered to be material to patentability because they are in this statement. No inference should be made that the

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Respectfully submitted,


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Sheet 1 of 2

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Application Number	09/724,784
Filing Date	11/28/00
First Named Inventor	Marc A. Unger
Group Art Unit	1772
Examiner Name	Unassigned
Attorney Docket Number	20174003000

U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
	1	6,174,365	B1	Sanjoh	01-16-2001	
	2	6,007,309		Hartley	12-28-1999	
	3	5,876,187		Afromowitz et al	03-02-1999	
	4	5,836,750		Cabuz	11-17-1998	
	5	5,759,014		Van Lintel	06-02-1998	
	6	5,705,018		Hartley	01-06-1998	
	7	5,659,171		Young et al.	08-19-1997	
	8	5,529,465		Zengerle et al.	06-25-1996	
	9	5,376,252		Ekstrom et al.	12-27-1994	
	10	5,375,979		Trah	12-27-1994	
	11	5,336,062		Richter	08-09-1994	
	12	5,265,327		Faris et al.	11-30-1993	
	13	5,259,737		Kamisuki et al.	11-09-1993	
	14	5,224,843		Van Lintel	07-06-1993	
	15	5,171,132		Miyazaki et al.	12-15-1992	
	16	5,096,388		Weinberg	03-17-1992	
	17	5,085,562		Van Lintel	02-04-1992	
	18	4,153,855		Feingold	05-08-1979	
	19	4,119,368		Yamazaki	10-10-1978	

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	20	WO	99/17093	A1		04-08-1999		
	21	WO	98/07069	A1		02-19-1998		
	22	EP	999 055	A2		10-05-2000		
	23	EP	845 603	A1		06-03-1998		
	24	EP	829 360	A2		03-18-1998		
	25	EP	779 436	A2		06-18-1997		
	26	EP	706 004	A2		04-10-1996		
	27	EP	703 364	A1		03-27-1996		
	28	EP	592 094	A2		04-13-1994		
	29	GB	2 308 460	A		06-25-1997		
	30	GB	2 155 152	A		09-18-1985		

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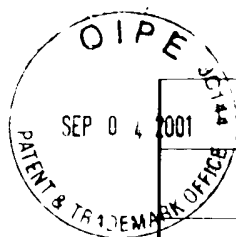
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Filing Date	11/28/00
First Named Inventor	Marc A. Unger
Group Art Unit	1772
Examiner Name	Unassigned
Attorney Docket Number	20174003000

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

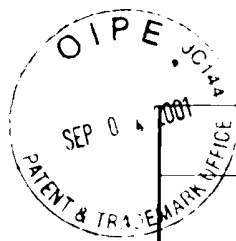
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	31	Brechtel et al., "Control of the electroosmotic flow by metal-salt-containing buffers," <u>J Chromatography A</u> , 716:97-105 (1995).	
	32	Bryzek et al., "Micromachines on the march," <u>8045 IEEE Spectrum</u> , 31(5):20-31 (1994). XP 000456261	
	33	Buchaillet et al., "Silicon Nitride Thin Films Young's Modulus Determination by an Optical Non-Destructive Method," <u>Jpn. J. Appl. Phys.</u> , 36 Pt. 2(6B):L794-L797 (1997).	
	34	Chiu et al., "Patterned deposition of cells and proteins onto surfaces by using three-dimensional microfluidic systems", <u>PNAS</u> , 97(6):2408-2413 (2000).	
	35	Chou et al., "A microfabricated device for sizing and sorting DNA molecules," <u>PNAS</u> , 96:11-13 (1999).	
	36	Delamarche et al., "Patterned Delivery of Immunoglobulins to Surfaces Using Microfluidic Networks," <u>Science</u> , 276:779-781 (1997).	
	37	Duffy et al., "Rapid Prototyping of Microfluidic Systems in Poly(dimethylsiloxane)", <u>Analytical Chemistry</u> , 70(23):4974-4984 (1998).	
	38	Duffy et al., "Rapid prototyping of microfluidic switches in poly(dimethyl siloxane) and their actuation by electro-osmotic flow," <u>J. Micromech. Microeng.</u> , 9:211-217 (1999).	
	39	Duffy et al., "Patterning Electroluminescence Materials with Feature Sizes as Small as 5µm Using Elastomeric Membranes as Masks for Dry Lift-Off," <u>Advanced Materials</u> , 11(7):546-552 (1999) XP-000849014	
	40	Effenhauser et al., "Integrated capillary electrophoresis on flexible silicone microdevices: Analysis of DNA restriction fragments and detection of single DNA molecules on microchips," <u>Anal. Chem.</u> , 69:3451-3457 (1997).	
	41	Effenhauser et al., "Integrated chip-based capillary electrophoresis," <u>Electrophoresis</u> , 18:2203-2213 (1997).	
	42	Fahrenberg et al., "A microvalve system fabricated by thermoplastic molding," <u>J. Micromech. Microeng.</u> , 5:169-171 (1995).	
	43	Fu et al., "A microfabricated fluorescence-activated cell sorter," <u>Nature Biotechnology</u> , 17:1109-1111 (1999).	
	44	Goll et al., "Microvalves with bistable buckled polymer diaphragms," <u>J. Micromech. Microeng.</u> , 6:77-79 (1996).	
	45	Graveson et al., "Microfluidics—a review", <u>J. Micromech. Microeng.</u> , 3:168-182 (1993)	

Hornbeck et al., "Bistable Deformation Mirror Device," Spatial Light Modulators and Applications 1988, Technical Digest Series, Volume 8, Postconference Edition, Summaries of papers presented at the Spatial Light Modulators and Applications Topical Meeting, June 15-17, 1988, Optical Society of America, pgs. 107-110.



48	Hosokawa et al., "Handling of Picoliter liquid samples in a poly(dimethylsiloxane)-based microfluidic device," <u>Anal. Chem.</u> , 71(20):4781-4785 (1999).	
49	Ikuta et al., "Three dimensional micro integrated fluid systems (MIFS) fabricated by stereo lithography," <u>IEEE Kyushu Institute of Technology</u> , pgs. 1-6 (1994).	
50	Jacobson et al., "High-speed separations on a microchip," <u>Anal. Chem.</u> , 66(7):1114-1118 (1994).	
51	Jacobson et al., "Microfluidic devices for electrokinetically driven parallel and serial mixing," <u>Anal. Chem.</u> , 71(20):4455-4459 (1999).	
52	Jung et al., "Chemical and Physical Interactions at Metal/Self-Assembled Organic Monolayer Interfaces," <u>Crit. Rev. Solid State Material Sciences</u> , 19(1):2-10 (1994) XP000955639	
53	Kenis et al., "Microfabrication inside capillaries using multiphase laminar flow patterning," <u>Science</u> , 285:83-85 (1999).	
54	Kopp et al., "Chemical Amplification: Continuous-Flow PCR on a Chip", <u>Science</u> , 280:1046-1048 (1998).	
55	Kuhn et al., "Silicon Charge Electrode Array for Ink Jet Printing", <u>IEEE Transactions on Electron Devices</u> , ED-25(10):1257-1260 (1978).	
56	Lin et al., "Free-space micromachined optical switches for optical networking," <u>IEEE J. Selected Topics in Quantum Electronics</u> , 5(1):4-9 (1999).	
57	Lötters et al., "The mechanical properties of the rubber elastic polymer polydimethylsiloxane for sensor applications," <u>J. Micromech. Microeng.</u> , 7:145-147 (1997).	
58	Lucy et al., "Characterization of the cationic surfactant induced reversal of electroosmotic flow in capillary electrophoresis," <u>Anal. Chem.</u> , 68:300-305 (1996).	
59	Maluf, N., <i>An Introduction to Microelectromechanical Systems Engineering</i> , Artech House Publishers, Boston London pages 42-45.	
60	Markx et al. "Applications of dielectrophoresis in biotechnology," <u>Tibtech</u> , 15:426-432 (1997).	
61	Muller et al., "Surface-micromachined microoptical elements and systems," <u>Proceedings of IEEE</u> , 86(8):1705-1720 (1998).	
62	Qin et al., "Elastomeric Light Valves" <u>Advanced Materials</u> , 9(5):407-410 (1997) XP-000683891	
63	Qin et al., "Photolithography with transparent reflective photomasks," <u>J. Vac. Science and Technology</u> , 16(1):98-103 (1998) XP00213356	
64	Rapp, R., "LIGA micropump for gases and liquids," <u>Sensors and Actuators A</u> , 40:57-61 (1994).	
65	Roylance et al., "A Batch-Fabricated Silicon Accelerometer", <u>IEEE Transactions on Electron Devices</u> , ED-26(12):1911-1917 (1979).	
66	Schasfoort et al., "Field-effect flow control for microfabricated fluidic networks," <u>Science</u> , 286:942-945 (1999).	
67	Schueller et al., "Fabrication of glassy carbon microstructures by soft lithography," <u>Sensors and Actuators A</u> , 72(2):125-139 (1999) XP004155654	
68	Shoji, S., "Fluids for Sensor Systems", <u>Topics in Current Chemistry</u> , 194:162-188 Springer Verlag Berlin Heidelberg (1998).	
69	Smits, J.G., "Piezoelectric Micropump with Three Valves Working Peristaltically," <u>Sensors and Actuators</u> , A21-A23:203-206 (1990).	
70	Tufte et al., "Silicon diffused-element piezoresistive diaphragms," <u>J. Appl. Phys.</u> , 62(11):3222-3227 (1992).	

Washida et al., "Molecular dielectrophoresis of nanoparticles," IEEE Transactions on Industry Applications, 30(4):835-843 (1994).



73	Xia et al., "Complex optical surfaces formed by replica molding against elastomeric masters," <u>Science</u> , 273:347-349 (1996).	
74	Xia et al., "Soft Lithography," <u>Angew. Chem. Int. Ed.</u> 37:551-575 (1998).	
75	Xia et al., "Micromodeling of Polymers in Capillaries: Applications in Microfabrication," <u>Chemistry of Materials</u> , 8(7):1558-1567 (1996) XP000626885	
76	Yang et al., "A Mems Thermopneumatic Silicone Membrane Valve", Proceedings of IEEE 10 th Annual International Workshop on MicroElectro Mechanical Systems, <u>Sensors and Actuators</u> , A64(1):101-108 (1998).	
77	Yazdi et al., "Micromachined inertial sensors," <u>Proceedings of IEEE</u> , 86(8):1640-1659 (1998).	
78	Young et al., "Contoured elastic-membrane microvalves for microfluidic network integration," <u>J. Biomechanical Engineering</u> , 121:2-6 (1999).	
79	XP-002149046, Ullmann's Encyclopedia of Industrial Chemistry, Sixth Edition, 1999 Electronic Release, 6 pages.	

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